IN THE CLAIMS:

Please substitute the following claims for the same-numbered claims in the application:

1.   (Currently Amended) A method of incrementally maintaining ~~an~~ algebraic aggregate ~~functions~~ function in ~~an~~ automatic summary ~~tables (ASTs)~~ table (AST) of at least one relational database, said method comprising:

~~associating a work area with each algebraic function of said algebraic functions in each AST, wherein multiple algebraic functions share the same work area;~~

~~populating variables within each work area for each algebraic function when each AST is created and when each AST is updated;~~

~~maintaining each work area by adding and subtracting to and from associated variables of each work area when associated data changes in said relational database;~~

~~computing each algebraic function; and~~

~~reporting said algebraic functions to a user~~

creating a first work area associated an additional column for said algebraic aggregate function of said AST;

creating a second work area associated with variables and error estimate variables of distributive aggregate functions used to compute said algebraic aggregate function,

wherein each said variable and each said error estimate variable corresponds to a row of said AST,

wherein each said error estimate variable estimates an error between a value of said variable and a full recomputation value of said variable; and

wherein said variables and said error estimate variables are incrementally maintainable;

upon receiving a query corresponding to said AST, populating and either inserting or deleting said variables and said error estimate variables within said second work area to provide an incrementally maintained variable and an incrementally maintained error estimate variable to said first work area;

if a ratio of an estimated error value of said algebraic aggregate function for a given row of said AST to said incrementally maintained error estimate value, corresponding to said given row, exceeds a threshold, then selectively recomputing a value for said variable, otherwise maintaining said incrementally maintained error estimate value of said variable; and

reporting said algebraic aggregate function of said AST, based on either said recomputed value or said incrementally maintained error estimate value, in response to said query.

2-20. (Cancelled).

21. (Currently Amended) A program storage device readable by computer, tangibly embodying a program of instructions executable by the computer to perform a method of incrementally maintaining algebraic aggregate functions in automatic summary tables (ASTs) of at least one relational database, said method comprising:

associating a work area with each algebraic function of said algebraic functions in each AST, wherein multiple algebraic functions share the same work area;

populating variables within each work area for each algebraic function when each AST is created and when each AST is updated;

maintaining each work area by adding and subtracting to and from associated variables of each work area when associated data changes in said relational database;

computing each algebraic function; and

reporting said algebraic functions to a user

creating a first work area associated an additional column for said algebraic aggregate function of said AST;

creating a second work area associated with variables and error estimate variables of distributive aggregate functions used to compute said algebraic aggregate function,

wherein each said variable and each said error estimate variable corresponds to a row of said AST,

wherein each said error estimate variable estimates an error between a value of said variable and a full recomputation value of said variable; and

wherein said variables and said error estimate variables are incrementally maintainable;

upon receiving a query corresponding to said AST, populating and either inserting or deleting said variables and said error estimate variables within said second work area to provide an incrementally maintained variable and an incrementally maintained error estimate variable to said first work area;

if a ratio of an estimated error value of said algebraic aggregate function for a given row of said AST to said incrementally maintained error estimate value, corresponding to said given row, exceeds a threshold, then selectively recomputing a value for said variable, otherwise maintaining said incrementally maintained error estimate value of said variable; and

reporting said algebraic aggregate function of said AST, based on either said recomputed value or said incrementally maintained error estimate value, in response to said query.

22-27. (Cancelled).